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New species of pyrenocarpous lichens from Spain

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Abstract: Two species of pyrenocarpous lichens, *Staurothele epigaea* and *Verrucaria navarrense*, are described as new. They have been collected from argillaceous soils at arid locations of Navarra province, Spain.

Resumen: Se describen dos nuevas especies de líquenes pirenocárpicos: *Staurothele epigaea* y *Verrucaria navarrense*; ambas viven en suelos arcillosos de localidades áridas en la provincia de Navarra (España).

Recent field work in Navarra province, Spain, mainly carried out by the second author, have brought to light several lichen taxa that are new to science or otherwise remarkable (BREUSS & ETAYO 1992, ETAYO 1989, 1990, 1993, ETAYO & van den BOOM 1995, ETAYO & al. 1993, ETAYO & BREUSS 1994, ETAYO & VEZDA 1994). Great emphasis has been taken on the epiphytic lichen flora, whereas terricolous lichens have received attention to a lesser degree. However, soil-inhabiting species form an important part of the lichen flora of the Iberian peninsula. In the present paper two species of pyrenocarpous lichens collected from argillaceous soils at arid sites of Navarra province are newly described.

Staurothele epigaea BREUSS & ETAYO, species nova

Species terricola. Thallus rimoso-areolatus, brunneus. Perithecia toto immersa, involucrellum hemisphaericum, ad ostiolum excipulo adpressum, ab lateribus plus minusve patens. Sporae 6-8 per ascum, pallidofuscae, muriformes, 22-30 x 12-15 µm. Alga hymenii cellulis elongatis 4-8 x (2.5-) 3-3.5 (-4) µm magnis.

T y p u s : España, Navarra, Las Bardenas, Reserva natural Vedado de Egüaras, cerca del corral de la Barrera, pinar muy aclarado con especies terrícolas, 20.7.1993 O. Breuss & J. Etayo (MA- holotype, W-BREUSS no. 9595 - isotype).

Species terricolous. Thallus superficial, thin, cracked-areolate, brown. Perithecia up to 300 µm diam., entirely immersed in the areoles, the ostioles showing as dark spots. Exciple pale to brown throughout, involucrellum well developed, dimidiate, slightly extending laterally. Asci 6- to 8-spored. Spores muriform, pale straw, ellipsoid, 22-30 x 12-15 µm. Hymenial algal cells oblong to elongate, 4-8 x (2. 5-) 3-3.5 (-4) µm.

Staurothele epigaea is one among four species known to be terricolous. *Staurothele geioica* ZSCH., known from Scotland and Switzerland, differs in having a granular

thallus, globose to shortly oblong hymenial algal cells, and larger, colourless spores (c. 30-37 x 15-18 μm). *Staurothele terricola* (BAGL.) POELT & NIMIS from Sardinia has cuboid to rectangular hymenial algal cells and larger spores (36-43 x 13-17 μm). *Staurothele argillacea* (FLAG.) ZAHLBR. from Algeria is easily distinguished by 2-spored asci. They all occur on calciferous soils.

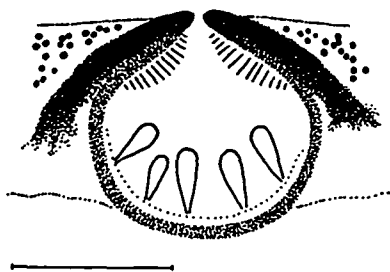


Fig. 1: *Staurothele epigaea*.
Vertical section of perithecium;
scale 200 μm .

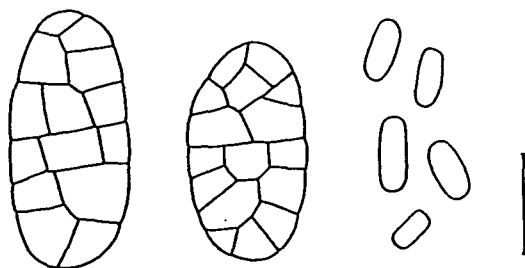


Fig. 2: *Staurothele epigaea*.
Ascospores and hymenial algal cells;
scale 10 μm .

Verrucaria navarrense BREUSS & ETAYO, species nova

Species terricola. Thallus minute areolatus, tenuis, pallide brunneus. Perithecia ad 250 μm lata, globosa. Excipulum nigrum; involucrellum destitutum. Sporae octonae, simplices, ellipsoideae, 12-15 x 6-7 μm .

Typus: España, Navarra, Lerín, suelo arcilloso con *Fulgensia subbracteata*, 15.2.1986 J. Etayo no. 10.655 (MA - holotype, W - isotype). Additional specimen: Navarra, carretera Lerín-Berbinzana, Km. 5, 385 m, suelo arcilloso, plano, cerca de charca, 29.7.1994 J. Etayo (hb. Etayo).

Species terricolous. Thallus superficial, thin, minutely cracked-areolate, pale brown. Perithecia immersed with only the ostiole evident, up to 250 μm diam., globose. Exciple black throughout; involucrellum absent. Asci 8-spored. Spores simple, ellipsoid, 12-15 x 6-7 μm .

Verrucaria is a predominantly saxicolous genus. Only very few species have been described from lignum, bark or soil. Among the terricolous species, *Verrucaria navarrense* is unique in its combination of thalline and perithecial characters and spore size. Anatomically the new species comes close to *Catapyrenium phaeocarpoides* (NYL.) BREUSS (BREUSS 1990), from which it differs by its crustose thallus, dark excipulum, and narrower spores. *Verrucaria sibirica* ZAHLBR. with similar perithecia and spores differs in its granular-verrucose thallus. The remaining soil-inhabiting species differ in having larger or (sub-)globose spores and/or development of an involucrellum (CLAUZADE & ROUX 1985, BREUSS 1989, ORANGE 1991). Some normally

saxicolous species may occasionally be found on earth, but our collections could not be identified with any known species.

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